

What is Claimed:

1. A clamp comprising:

a clamp body comprising:

a spring arm extending generally in an arc having a first end and a second end;

a protrusion projecting from said spring arm proximate said second end thereof; and

a deflection arm connected at a first end thereof to said first end of said spring arm and having a second end disposed in spaced relation with respect to said protrusion, said deflection arm being constructed and arranged such that relative movement of said protrusion and said second end of said deflection arm away from each other effects a corresponding circumferential contraction of said spring arm and relative movement of said protrusion and said second end of said deflection arm toward each other effects a corresponding circumferential expansion of said spring arm; and

an actuating device engaged with said protrusion and said deflection arm and constructed and arranged to, upon manipulation thereof, effect relative movement of said protrusion and said second end of said deflection arm with respect to each other to thereby cause a corresponding circumferential contraction or expansion of said spring arm.

2. The clamp of claim 1, wherein said spring arm has an angular extent of about 270 - 300 degrees between said first and second ends thereof.

3. The clamp of claim 1, wherein said deflection arm includes a curved portion extending from said first end thereof to an intermediate position along said deflection arm and a straight portion extending from said intermediate position to said second end of said deflection arm.

4. The clamp of claim 3, wherein said spring arm has a substantially constant radius of curvature and said curved portion of said deflection arm has substantially the same curvature as said spring arm.

5. The clamp of claim 3, wherein said straight portion of said deflection arm is substantially parallel to an imaginary line connecting said first and second ends of said spring arm.

6. The clamp of claim 1, wherein said clamp body comprises a single, integral piece of material.

7. The clamp of claim 6, wherein said material is selected from the group comprising: aluminum, nylon, and polypropylene.

8. The clamp of claim 1, wherein said actuating device comprises a threaded rod extending between and engaged with said deflection arm, proximate said second end thereof, and said protrusion.

9. The clamp of claim 8, wherein said threaded rod extends through a first hole formed through said deflection arm proximate said second end thereof.

10. The clamp of claim 9, wherein said threaded rod comprises a screw having a head with a threaded shaft extending therefrom and a tip at an opposite end of said threaded shaft from said head, and wherein said first hole is threaded so as to be cooperable with said threaded shaft of said screw, wherein said screw has a length such that when said screw is inserted through said first hole and said tip of said screw is engaged with said protrusion, said head of said screw is not in contact with said deflection arm, and wherein rotation of said screw causes said deflection arm to travel along said threaded shaft toward said head of said screw, while engagement of said screw tip with said protrusion prevents movement of said protrusion relative to said screw thereby effecting said relative movement of said second end of said deflection arm with respect to said protrusion.

11. The clamp of claim 10, further comprising a blind hole formed in said protrusion within which said tip of said screw is seated when said tip of said screw is engaged with said protrusion.

12. The clamp of claim 9, wherein said threaded rod comprises a screw having a head with a threaded shaft extending therefrom and a tip at an opposite end of said threaded shaft from said head, and wherein said actuating device further comprises a nut threadably cooperable with said threaded shaft of said screw, wherein said screw has a length such that when said screw is inserted through said first hole and said tip of said screw is engaged with said protrusion, said head of said screw is not in contact with said deflection arm, and wherein rotation of said nut while in contact with said deflection arm causes said nut and said deflection arm to

advance along said threaded shaft toward said head, while engagement of said screw tip with said protrusion prevents movement of said protrusion relative to said screw thereby effecting said relative movement of said second end of said deflection arm with respect to said protrusion.

13. The clamp of claim 8, wherein said threaded rod is arranged such that it is substantially parallel to an imaginary axis extending through a center of curvature of said spring arm and bisecting a gap between said first and second ends of said spring arm.

14. The clamp of claim 1, wherein said actuating device includes a load limitation feature constructed and arranged to prevent the relative movement of said second end of said deflection arm away from said protrusion from exceeding a predetermined amount to thereby limit the amount of corresponding circumferential contraction.

15. The clamp of claim 10, wherein said actuating device includes a load limitation feature constructed and arranged to prevent the relative movement of said second end of said deflection arm away from said protrusion from exceeding a predetermined amount to thereby limit the amount of corresponding circumferential contraction, said load limitation feature comprising the head of said screw which is constructed and arranged to contact said deflection arm to limit the distance by which said deflection arm can advance along said threaded shaft during rotation of said screw.

16. A clamp comprising:

a means for providing a clamping force comprising:

a spring arm means for contracting or expanding along an arc; and

an actuating means for controlling an amount of circumferential contraction of said spring arm means to generate said clamping force.

17. The claim of claim 16, wherein said means for providing a clamping force further comprises projection means for allowing said actuating means to contract or expand said spring arm means.

18. The clamp of claim 17, wherein said spring arm means an angular extent of about 270 - 300 degrees.

19. The clamp of claim 17, wherein said projection means comprises a deflection arm and a projection, said deflection arm including a curved portion extending from a first end thereof to an intermediate position and a straight portion extending from said intermediate position to said second end thereof; and

wherein said deflection arm and said projection are arranged such that said actuating means contracts said spring arm by moving said deflection arm and said projection away from each other.

20. The clamp of claim 19, wherein said spring arm means has a substantially constant radius of curvature and said curved portion of said deflection arm has substantially a same curvature as said spring arm means.

21. The clamp of claim 20, wherein said straight portion of said deflection arm is substantially parallel to an imaginary line connecting first and second ends of said spring arm means.

22. The clamp of claim 17, wherein said means for providing said clamping force comprises a single, integral piece of material.

23. The clamp of claim 22, wherein said material is selected from the group consisting of aluminum, nylon, and polypropylene.

24. The clamp of claim 19, wherein said actuating means comprises a means for engaging with said deflection arm and said protrusion and for forcing said deflection arm and said protrusion away from one another and for allowing said deflection arm and said protrusion to move toward one another, in order to respectively increase or decrease said circumferential contraction of said spring arm means.

25. The clamp of claim 24, wherein said spring arms generates a force between said deflection arm and said protrusion opposing a force applied by said actuating means.

26. The clamp of claim 25, wherein said actuating means comprises a threaded rod, said deflection arm comprises a hole with which said threaded rod engages said deflection arm, and said protrusion includes an engagement means for accepting an end of said threaded rod to allow said threaded rod to force said

deflection arm and said protrusion away from one another, or allow said deflection arm and said protrusion to move toward one another, or

27. The clamp of claim 17, wherein said actuating means includes a load limitation means for preventing the relative movement of said deflection arm away from said protrusion from exceeding a predetermined amount to thereby limit the amount of corresponding circumferential contraction.

28. The clamp of claim 27, wherein said actuating means includes a load limitation means for preventing the relative movement of said deflection arm away from said protrusion from exceeding a predetermined amount to thereby limit the amount of corresponding circumferential contraction.

29. A syringe pump assembly comprising:

a mechanized syringe including a barrel, a plunger disposed within said barrel for reciprocating movement therein, and a motor operatively coupled to said plunger for effecting mechanized movement of said plunger; and

an anti-rotation clamp secured to said syringe and constructed and arranged to prevent rotation of said syringe by contacting a structure adjacent to said syringe, said anti-rotation clamp comprising:

a clamp body comprising:

a spring arm extending generally in an arc having a first end and a second end;

a protrusion projecting from said spring arm proximate said second end thereof; and

a deflection arm connected at a first end thereof to said first end of said spring arm and having a second end disposed in spaced relation with respect to said protrusion, said deflection arm being constructed and arranged such that relative movement of said protrusion and said second end of said deflection arm away from each other effects a corresponding circumferential contraction of said spring arm and relative movement of said protrusion and said second end of said deflection arm toward each other effects a corresponding circumferential expansion of said spring arm; and

an actuating device engaged with said protrusion and said deflection arm and constructed and arranged to, upon manipulation thereof, effect relative movement of said protrusion and said second end of said deflection arm with respect to each other to thereby cause a corresponding circumferential contraction or expansion of said spring arm.

30. The syringe pump assembly of claim 29, wherein said spring arm has an angular extent of about 270 - 300 degrees between said first and second ends thereof.

31. The syringe pump assembly of claim 29, wherein said deflection arm includes a curved portion extending from said first end thereof to an intermediate position along said deflection arm and a straight portion extending from said intermediate position to said second end of said deflection arm.

32. The syringe pump assembly of claim 29, wherein said clamp body comprises a single, integral piece of material.

33. The syringe pump assembly of claim 32, wherein said material is selected from the group comprising: aluminum, nylon, and polypropylene.

34. The syringe pump assembly of claim 29, wherein said actuating device comprises a threaded rod extending between and engaged with said deflection arm, proximate said second end thereof, and said protrusion.

35. The syringe pump assembly of claim 34, wherein said threaded rod extends through a first hole formed through said deflection arm proximate said second end thereof.

36. The syringe pump assembly of claim 34, wherein said threaded rod comprises a screw having a head with a threaded shaft extending therefrom and a tip at an opposite end of said threaded shaft from said head, and wherein said first hole is threaded so as to be cooperable with said threaded shaft of said screw, wherein said screw has a length such that when said screw is inserted through said first hole and said tip of said screw is engaged with said protrusion, said head of said screw is not in contact with said deflection arm, and wherein rotation of said screw causes said deflection arm to travel along said threaded shaft toward said head of said screw, while engagement of said screw tip with said protrusion prevents movement of said protrusion relative to said screw thereby effecting said relative movement of said second end of said deflection arm with respect to said protrusion.

37. The syringe pump assembly of claim 36, further comprising a blind hole formed in said protrusion within which said tip of said screw is seated when said tip of said screw is engaged with said protrusion.

38. The syringe pump assembly of claim 29, wherein said actuating device includes a load limitation feature constructed and arranged to prevent the relative movement of said second end of said deflection arm away from said protrusion from exceeding a predetermined amount to thereby limit the amount of corresponding circumferential contraction.

39. The syringe pump assembly of claim 36, wherein said actuating device includes a load limitation feature constructed and arranged to prevent the relative movement of said second end of said deflection arm away from said protrusion from exceeding a predetermined amount to thereby limit the amount of corresponding circumferential contraction, said load limitation feature comprising the head of said screw which is constructed and arranged to contact said deflection arm to limit the distance by which said deflection arm can advance along said threaded shaft during rotation of said screw.